

Monday, October 4, 2021 - 11 AM - 12 PM
In Person - MAE-A Room 303
and online - <https://ufl.zoom.us/j/93540329913>

SUPERcomputing, Analysis & NASA Missions **Olaf O. Storaasli, Ph.D.**



Abstract

With theory & experiment, Supercomputing is a 3rd leg of scientific discovery. As experiments are costly & slow, innovations now often harness HPC accelerators to achieve breakthroughs. Olaf will share highlights of his 35-year career in Structural Analysis & Supercomputing @NASA + 2nd career in Future Technology & HPC @ORNL. These include analyses of Viking (1st Mars landers), Space Shuttle (hrs to secs), equation solver (NASA software-of-the-year Award), Finite Element Machine & 100x DNA sequencing speedup on FPGA-based HPCs. Olaf describes his rapid analyses on early supercomputers thru NASA & ORNL supercomputers resulting in 10^{15} speedup. He ends with a glimpse of how the next generation of ExaFLOP HPCs (e.g. ORNL's Frontier) will enable future scientific & engineering breakthroughs including AI, climate, design & simulation.

Biography

From pre & early NASTRAN development, CAD/CAM, Viking Mars Lander analysis, Finite Element Machine (NASA's 1st inhouse parallel computer) lead, reducing Shuttle SRB redesign from hours to seconds, Olaf, a supercomputing pioneer, created novel analysis algorithms, relational database, including GPS, winner of NASA's Software-of-the-Year Award. His supercomputing research harnessed accelerators (i.e. FPGAs) enabling scientific discovery: fast large matrix solution for structural static, dynamic, acoustic, climate & nonlinear analysis. His Engineering Ph.D's from NCSU and he conducted innovative research on NTH Thompson Fellowship & EPCC postdocs in Norway and the U.K. To prepare for Olaf's talk, view Olaf's AIAA talk, bio and bring your questions.

